

Complete Summary

GUIDELINE TITLE

Optimising small solute clearances in peritoneal dialysis.

BIBLIOGRAPHIC SOURCE(S)

Optimising small solute clearances in peritoneal dialysis. Nephrology 2005 Oct;10(S4):S95-103.

Optimising small solute clearances in peritoneal dialysis. Westmead NSW (Australia): CARI - Caring for Australians with Renal Impairment; 2004 Dec. 22 p. [40 references]

GUIDELINE STATUS

This is the current release of the guideline.

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SCOPE

DISEASE/CONDITION(S)

End-stage kidney disease (ESKD)

GUIDELINE CATEGORY

Management
 Treatment

CLINICAL SPECIALTY

Nephrology

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To summarise the current knowledge of methods to optimise small solute clearance in peritoneal dialysis delivery

TARGET POPULATION

Patients with end-stage kidney disease (ESKD) on peritoneal dialysis

INTERVENTIONS AND PRACTICES CONSIDERED

Treatment

Peritoneal dialysis

- Maintenance of residual renal function: angiotensin converting enzyme inhibitors
 - Icodextrin in automated peritoneal dialysis
- Individualized dialysis prescription
 - Dialysis volume
 - Number of exchanges
 - Ultrafiltration

MAJOR OUTCOMES CONSIDERED

- Urea clearance (Kt/V)
- Glomerular filtration rate
- Creatinine clearance
- Doubling of serum creatinine
- Hyperkalemia
- Anemia
- Exit-site infection
- Peritonitis
- Hypotension
- Cardiovascular events
- Hospitalization
- Mortality

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Databases searched: Medline (1966 to October Week 3 2003). Medical Subject Headings (MeSH) terms and text words for peritoneal dialysis were combined with MeSH terms and text words for small solute clearance and kidney function. The search strategy was not limited by study type in order to maximise the number of relevant articles obtained. The Cochrane Renal Group Specialised Register of randomised controlled trials was also searched for relevant trials not indexed in Medline.

Date of searches: 28 October 2003.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Recommendations of Others. Recommendations regarding optimizing small solute clearances in peritoneal dialysis from the following groups were discussed: Kidney Disease Outcomes Quality Initiative, British Renal Association, Canadian Society of Nephrology, European Best Practice Guidelines, and International Society of Peritoneal Dialysis Guidelines.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the levels of evidence (I–IV) can be found at the end of the "Major Recommendations" field.

Guidelines

- a. Aim to maintain residual renal function (RRF). Consider the use of ace inhibitors (*Level II evidence*) to preserve residual renal function and avoidance of nephrotoxins.
- b. With automated peritoneal dialysis (APD), consider the use of icodextrin for the long dwell. (*Level II evidence*)

Suggestions for Clinical Care

(Suggestions are based on Level III and IV sources)

- Aim to maintain RRF. It is a significant contributor to dialysis adequacy. (*Level III evidence*) Increasing clearance by an increase in peritoneal clearance cannot make up for loss of RRF. (*Level III evidence*)

- In general, increasing the dialysis volume or increasing the number of daily exchanges will increase the prescribed dialysis dose. The use of APD has not yet been shown to offer a clear advantage in small solute clearances. (*Level III evidence*)
- Peritoneal dialysis (PD) prescribing should be individualised to the patient, taking into account their body size, peritoneal transport status, RRF and personal preferences. (*Levels III and IV evidence*)

Optimising Small Solute Clearances

- Increasing the fill volume, the number of exchanges or the amount of ultrafiltration should increase clearances in most patients. Some patient populations may not tolerate increasing dwell volumes in continuous ambulatory peritoneal dialysis (CAPD), especially small patients. Even larger patients often cannot achieve targets set despite the increase in dialysis dose on CAPD. Use of APD should be considered in this group.
- Individualised PD prescriptions are essential, taking into account:
 - Peritoneal transport
 - RRF
 - Body surface area
- Aim to provide the most dialysis possible to a patient given the constraints of lifestyle and quality of life, cost and clinical setting.
- Aim to preserve RRF.
- An increase in peritoneal clearance will be needed as RRF diminishes. Adequate PD should be achievable in nearly all patients, even low-low average transporters as long as they retain some RRF.
- APD patients generally require wet days except some with high transport properties or considerable RRF.
- Low-low average transport patients generally achieve better clearances with continuous regimens such as continuous ambulatory peritoneal dialysis (CAPD) and continuous cyclic peritoneal dialysis (CCPD) whereas high-high average transport patients achieve better small solute clearances with short dwell techniques such as nocturnal peritoneal dialysis (NPD), and nocturnal tidal peritoneal dialysis (NTPD).
- Use of icodextrin will usually increase ultrafiltration and therefore solute removal and should be considered for the long daily dwell.
- Soon after each prescription change, total (renal and peritoneal) clearances should be measured.

Definitions:

Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with

historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Patients with end-stage kidney disease on peritoneal dialysis will be appropriately managed for optimal small solute clearance.
- Small solute clearance has been emphasized historically as one of the most important factors determining dialysis adequacy.

POTENTIAL HARMS

Possible negative consequences of interventions to improve small solute clearances include increased cost and time, potential for volume overload and abdominal distension and greater peritoneal exposure to glucose with local and metabolic effects.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Implementation and Audit

The Australia and New Zealand Dialysis and Transplant Registry (ANZDATA) registry should be used to determine small solute clearances in the Australian and New Zealand dialysis populations by mode of peritoneal dialysis, including details of and the rate of loss of residual renal function as well as associated clinical events. Suggest inclusion of details regarding how clearances were achieved; fill volume used, ultrafiltration achieved and dialysis prescription. Document any adverse outcomes from achieved small solute clearances such as degree of inflammation, cost, and concurrently report other relevant dialysis outcomes such as cardiovascular events.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2005 Oct

GUIDELINE DEVELOPER(S)

Caring for Australasians with Renal Impairment - Disease Specific Society

SOURCE(S) OF FUNDING

Industry-sponsored funding administered through Kidney Health Australia

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All guideline writers are required to fill out a declaration of conflict of interest.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [Caring for Australasians with Renal Impairment \(CARI\) Web site](#).

Print copies: Available from Caring for Australasians with Renal Impairment, Locked Bag 4001, Centre for Kidney Research, Westmead NSW, Australia 2145

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- The CARI guidelines. A guide for writers. Caring for Australasians with Renal Impairment. 2006 May. 6 p.

Electronic copies: Available from the [Caring for Australasians with Renal Impairment \(CARI\) Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

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